any craft less suited for descending rapids could scarcely be imagined. Mr. Roosevelt recommended future explorers to use Canadian birch-bark canoes in their place. When the last cataract had been left behind, about latitude 10° 50′ S., the first rubber worker was soon encountered, and others were met with at intervals down the river to its junction with the Madeira about latitude 5° 20′ S.

Mr. Roosevelt remarked on the fact that, though this was by far the most important tributary of the Madeira below the junction of the Beni and Mamoré, it did not appear on any map, except as a short and unimportant creek. It remains to be seen whether the whole of the water of the river takes this course. It seems quite possible that, when the river is high, some may pass into the Madeira by other routes, or may find an outlet into the Amazon by way of the Canumá channel, a lateral branch of the Madeira.

There is no doubt that the expedition has accomplished a valuable piece of work, and has, in Mr. Roosevelt's own words, placed a river comparable in size to the Elbe for the first time on the map. It is probably the most important achievement in river exploration in tropical South America since 1880, when Heath descended the Beni from Rurenabaque and showed that it united with the Manutata (Madre de Dios) and Mamoré to form the Madeira.

The collections made by the expedition should prove of interest, especially the rocks of the cataracts, which are on the line of strike of the crystalline rocks of the Madeira cataracts described by the writer. It was in descending the rapids that Mr. Roosevelt contracted fever, so that they appear to have the same malarial character as many other cataracts in South America, presumably because they offer facilities for the breeding of Anopheles in rock pools.

John W. Evans.

NOTES.

The list of honours conferred on the occasion of the celebration of the King's birthday on Monday, June 22, includes the names of a few men of distinguished eminence in the scientific world, and of others who, while belonging to various departments of the public service, have done notable work for science. Among the new peers is Sir Leonard Lyell, Bart., a nephew of Sir Charles Lyell, and formerly a professor of natural science in the University College of Wales. Colonel S. G. Burrard, F.R.S., Surveyor-General in India, has been appointed a K.C.S.I., and Mr. R. A. S. Redmayne, C.B., Chief Inspector of Mines, Home Office, has been promoted to the rank of K.C.B. The new knights include:—Dr. J. G. Frazer, author of "The Golden Bough"; Dr. W. P. Herringham, Vice-Chancellor of London University and physician to St. Bartholomew's Hospital; Dr. W. H. St. John Hope, archæologist; Dr. W. Milligan, known by his investigation into the connection of human and animal anthrax; Lieut.-Colonel Leonard Rogers, Indian Medical Service, professor of pathology, Medical College, and bacteriologist to Government, Calcutta; Dr. T. Kirke Rose, chemist and assayer to the Royal Mint; Dr. S. J. Sharkey, lecturer on medicine at St. Thomas's Hospital; and Mr. J F. C. Snell, president-elect of the Institute of Electrical Engineers. The honour of Knight Bachelor has been conferred upon Dr. Douglas Mawson, the Antarctic explorer, and Prof. T. P. Anderson Stuart, dean of the faculty of medicine at Sydney University. Mr. R. Meredith, Director of Telegraphs, India; Mr. A. Howard, imperial economic botanist at Pusa, Bengal; Major E. D. W. Greig, assistant director, Central Research Institute, Kasauli; Dr. T. Summers, late Bombay Public Works Department; and Mr. R. H. Tickell, chief engineer, Central Provinces, have received the honour of C.I.E. Dr. H. R. D. Spitta, bacteriologist to his Majesty's Household, has been appointed M.V.O. (Fourth Class).

At the meeting of the London Mathematical Society on June 11 it was announced that the de Morgan medal had been awarded to Sir Joseph Larmor.

By the will of Sir David Gill, the Royal Astronomical Society is bequeathed the sum of 250*l.* to be employed by the council of the society in aid of astronomical research in remembrance of the like sum paid out of the funds of the society in aid of his expedition to Ascension in 1876.

We learn from the *Lancet* that the Emile Chr. Hansen prize for 1914, which consists of a gold medal and 2000 kroner (approximately 100 guineas), has been awarded to Prof. Jules Bordet, director of the Institut Pasteur of Brabant, in recognition of his original medical work in microbiology.

The president of the British Science Guild (the Right Hon. Sir William Mather), and Lady Mather, have arranged to give a garden party to the members of the British Science Guild on Wednesday, July 8, at the Garden Club of the Anglo-American Peace Centenary Exposition, Shepherd's Bush.

The work done on behalf of tropical medicine by Mr. Joseph Chamberlain and Mr. Austen Chamberlain has been commemorated by placing their portraits in bronze relief in the Albert Dock Hospital of the Seaman's Hospital Society. The tablets were unveiled on Tuesday by Mr. Harcourt, Secretary of State for the Colonies.

Mr. G. A. Hight writes from Samer, Pas de Calais, giving particulars of the storm experienced on June 14. The rainfall measured at Samer during the storm between 12.50 and 2.45 p.m., was 3·86 inches, and nearly all fell before 2.15 p.m. The most remarkable feature of the storm was its local character, for in villages only two or three miles to the south of Samer there was no rain. During the storm the temperature fell from 70° to 61° F.

According to a Reuter telegram from Copenhagen, Mr. Ole Olsen, the Danish millionaire, has offered to place sufficient funds for the fitting out of a north pole expedition at the disposal of M. Knud Rasmussen, the Danish explorer who has travelled much in Greenland and among the Eskimo. The expedition, which will take provisions for two years, will be provided with all modern appliances, and will be accompanied by a scientific staff. The base will be at Cape York, in Greenland. The expenses are estimated at about 15,000*l*. A start will probably be made in the summer of 1915.

Our contemporary, the *British Journal of Photography*, is this year celebrating its diamond jubilee. The journal has been published continuously since 1854—that is, from the very early days of the wet collodion process—so that in its pages the history of photography is recorded as the events took place, with the exception of the still earlier daguerreotype period. It is fitting, therefore, that the diamond jubilee number, just issued, should contain a short history of the journal with portraits of its successive editors, and portraits of twelve "veterans of photography," the qualification for which class is an age of seventy or more, and a lifelong association with photography. With the special number is included a twenty-four page supplement, which gives an excellent summary of the history of photography, with many portraits and other interesting illustrations. Among the portraits is one of two of the "veterans," Sir William Crookes and Mr. John Spiller, taken fifty-nine years ago.

The council of the Aeronautical Society of Great Britain has awarded the gold medal of the society to Prof. G. H. Bryan, F.R.S., for the great services he has rendered to aeronautics by his development of the theory of the stability of aeroplanes. Prof. Bryan is an old member of the society, to which in 1903 he communicated, in conjunction with Mr. Ellis Williams, a paper on the longitudinal stability of aeroplane gliders, containing the beginnings of the theory of stability he has since developed and published in his monograph, "Stability in Aviation" (1911). The previous recipients of the gold medal of the society, which is the highest award of British scientific aeronautics, are Wilbur and Orville Wright (1909), and Octave Chanute (1910). The official presentation of the medal to Prof. Bryan will take place next session at a date to be announced later.

The nineteenth International Congress of Americanists (for the study of the ethnology and archæology of the Americas), will meet at Washington, October 5–10, under the patronage of the President of the United States and with the cooperation of the Smithsonian Institution, the universities, and other learned bodies. A full programme has been issued of the meetings, entertainments, and of a highly interesting excursion for the foreign members, to last rather more than two weeks. The principal cities and their museums will be visited and also New Mexico for the cliff-dwellings and pueblos. The Universities of Oxford and Cambridge have appointed delegates, and it is hoped that Great Britain may be fully represented, especially as the eighteenth congress was held in London, May, 1912. Members' fees, 1*l*., and associates, 10*s*., may be sent by money order to Dr. A. Hrdlička, National Museum, Washington, D.C., U.S.A. The proceedings will be issued to members only.

It is proposed to erect, by international subscription a monument to the memory of Nicolas Louis de la Caille, at Rumigny (Ardennes). Among astronomers who have contributed substantially to the advancement of knowledge of the universe, de la Caille claims a distinguished place. He was the principal collaborator with the third Cassini in the measurement of the arc of meridian from north to south of France, with the view of settling the question as to whether the figure of the earth was oblate or prolate. He went on a mission to the Cape of Good Hope, and while there determined the positions of ten thousand stars, measured an arc of meridian in South Africa, thus starting the triangulation to connect the Cape with Cairo, his observations, combined with those of astronomers in the northern hemisphere, giving increased accuracy to the determination of the moon's distance. His work, completed in less than four years, was commemorated by the Royal Society of South Africa in 1901 by the erection of a tablet on the house in which he lived in Cape Town. He was one of the leading lights of the eighteenth century, and his work merits the monument which it is proposed to erect. The president of the executive committee which is appealing for subscriptions is M. Baillaud, director of the Paris Observatory, and the members of the honorary committee include many distinguished astronomers in France and elsewhere.

The International Fire Service Council's executive held a series of meetings in London on June 15–19, at the invitation of the British Fire Prevention Committee. The meetings have been honoured by his Majesty wishing the council success; the delegates have been received on behalf of his Majesty's Government, who have entertained them at luncheon, when the Earl Beauchamp, presiding, took the opportunity to express his appreciation of their work and its beneficial influence, and the London County Council has entertained the visitors and afforded them numerous facilities. The work of the International Council, which was presided over by Commandant Meier, of Amsterdam (president of the council), included the technical arrangement of the proposed International Fire English-French-German Dictionary of 5000 technical terms, which the council will now be able shortly to issue, thanks to the liberality of an English donor who has offered to bear the cost of its production. Arrangements were made for the holding of a full meeting of the council and an International Fire Congress at Copenhagen in 1915, when questions relating to celluloid dangers, fire on board ship, petroleum dangers, and the formation of county or district motor fire brigades are to be under consideration.

Last Saturday, June 20, the Physical Society held a meeting at Cambridge. A party of about one hundred travelled from London, and proceeded to the works of the Cambridge Scientific Instrument Co. After inspecting the works, the members and their friends were entertained by the company at a luncheon in the hall of St. John's College. The president, Sir J. J. Thomson, in expressing the thanks of the society for the company's hospitality, directed attention to its excellent work, and to the part it played in putting into a commercial form the crude ideas of the pure physicist in developing new instruments. Mr. Horace Darwin, chairman of the company, in responding, remarked that it aimed at turning out not only well-finished instruments, but also instruments that would last owing to good design. In referring to the president of the society, Mr. Darwin directed attention to the remarkable succession of professors at the Cavendish Laboratory, namely, Clerk Maxwell, then Lord Rayleigh, and now Sir J. J. Thomson. He concluded by thanking the master and fellows of St. John's College for permitting the lunch to be held in the hall. After a reply by Dr. G. D. Liveing, the members visited some of the colleges and proceeded to the Cavendish Laboratory, where Sir J. J. Thomson read a paper on the production of very soft Rontgen radiation by the impact of positive and slow kathode rays, and Mr. F. W. Aston read a paper on the homogeneity of atmospheric neon. This was followed by tea by invitation of Sir Joseph and Lady Thomson, and experimental demonstrations in the laboratory.

DR. WOLBACH and Mr. Binger describe two new spirochæte organisms (*S. elusa* and *S. biflexa*) from pond-water. The former was cultivated in hay infusion; it is very minute, and is filterable through a Berkefeld filter (*Journ. Med. Research,* vol. xxx., No. 1, 1914).

BULLETIN No. 92 of the U.S. Department of Agriculture gives an account of experiments by Dr. White on the destruction of germs of infectious bee diseases by heat. Temperatures of 63° C. for European foul brood, 98° C. for American foul brood and 58° C. for sacbrood and Nosema disease, with an exposure for ten minutes, were found effective. These data may be of practical service in preventing the ravages of these diseases.

IN the Memoirs of the Department of Agriculture in India (Veterinary Series, vol. ii., No. 3, 1914) Major Holmes details tests of the curative value of iodine and of carbolic acid on hæmorrhagic septicæmia and rinderpest, two important cattle diseases, in which the mortality is about 90 per cent. Iodine treatment reduced the mortality in hæmorrhagic septicæmia to about 50 per cent., and in rinderpest to about 67 per cent. Of ten rinderpest animals treated with carbolic acid, three survived, a mortality of 70 per cent. Potassium permanganate was found to have no curative value in either disease.

IN the *Quarterly Journal of Microscopical Science* for June (vol. lx., part 2), Prof. Arthur Willey gives a description of the blastocyst and placenta of the beaver, having been fortunate enough to obtain much younger stages than any hitherto known. In the same number Prof. G. C. Bourne describes a remarkable new type of Alcyonarian, to which he gives the name *Acrossota liposclera.* The specimen was collected by Prof. Willey near British New Guinea, and differs from all other known Alcyonarians in the possession of simple, unbranched tentacles. The tentacles are, however, always eight in number, and in other respects also the species is typically Alcyonarian. A new family, the Acrossotidæ, is proposed, and placed in the order Stolonifera of Hickson.

EXCELLENT photographs illustrative of the breeding habits of the pratincole and the Kentish plover form one of the striking features in the June number of *Wild Life.*

WE are indebted to Dr J. Ritchie for a copy of an article in the May number of the *Scottish Naturalist* on early references to the occurrence of four-horned sheep in Scotland. The earliest of these is in a work on Scottish affairs by Bishop Leslie, published in Rome in 1578.

THE care of home aquaria is one of two titles given to a small illustrated pamphlet by Dr. R. C. Osburn, published by the New York Zoological Society. In the United States small aquaria, both marine and fresh-water, appear to be much more common at the present day than they are in this country; and the tract is intended for the use of beginners in the cult. Dr. Osburn emphasises the importance of a proper balance between animal and vegetable life in the tank, and, when this is established, the harmfulness of frequent change of the water.

MR. O. A. M. HAWKES has devoted a large amount of time and labour to the study of the relative lengths of the first and second toes of the human foot, from the point of view of occurrence, anatomy, and heredity, the results of which are published, with a number of sciograph and other illustrations, in the April number of the *Journal of Genetics.* Three chief types are noticeable, in the first and most common of which the "great" toe is longer than any of the others; in the second type the maximum length occurs in the second toe, while in the third, and rarest, type, the first and second toes are equal in length and longer than any of the other three.

AT the Monaco International Zoological Congress it was resolved that a certain number of well-known generic names of animals which, on grounds of priority or for other reasons, are liable to replacement, might be submitted to the International Commission on Nomenclature for retention by "fiat." A list—signed by Messrs. K. Andersen (Denmark), E. Lönnberg (Sweden), A. Cabrera (Spain), R. Lydekker (England), P. Matschie (Germany), O. Thomas (England), and E. L. Trouessart (France)—of sixteen mammalian names recommended for conservation in this manner has now been drawn up with the view of presentation to the commission. The scheduled names are Anthropopithecus (chimpanzi), Cercopithecus (guenon monkeys), Chiromys (aye-aye), Cœlogenys (paca), Dasypus (six-banded armadillos), Dicotyles (peccaris), Echidna (spiny ant-eater), Galeopithecus (flying-lemur), Gazella (gazelles), Hapale (marmosets), Hippotragus (sable and roan antelopes), Lagidium (mountain chinchilla), Manatus (manatis), Nycteris (certain African bats), Rhytina (Steller's sea-cow), and Simia (orang-utan). Hyrax (rock-conies) might well have been added. It is to be hoped that not only will the commission issue the "fiat," but that naturalists will make a point of accepting the names thus legalised. In many instances their rejection involves the transference of names from one genus to another (as, for instance, Simia from the orang-utan to the chimpanzi, and Cynocephalus, so long used for the dog-faced baboons, to the flying-lemur), which is the worst of all evils in zoological nomenclature. Echidna will have to be disused in ichthyology.

AMONG recent additions to the Natural History Branch of the British Museum, the following specimens are of general public interest:—The skeleton of the thoroughbred stallion, "St. Simon," presented by the Duke of Portland, which is not yet on exhibition, but is, we understand, to be placed alongside the skeleton of his son, "Persimmon," presented by his late Majesty King Edward VII. "St. Simon" was foaled in 1881, and was never beaten on the Turf. Another highly interesting skeleton is that of the Egyptian Eocene two-horned ungulate, Arsinoëtherium, which has just been set up in the fossil mammal gallery. As a matter of fact, this skeleton is a restoration in plaster, but as nearly all the elements have been modelled from actual bones, it is practically as good as if an original. As mounted, the skeleton is about 11½ ft. in length from the muzzle to the root of the tail, a striking feature being the very wide interval between the limbs of opposite sides. The precise affinities of this strange beast are still unknown. In the upper mammal gallery the attention of the public has been riveted on a gigantic specimen of the eastern race of the gorilla (*Anthropopithecus gorilla beringeri*), from the neighbourhood of Lake Tanganyika, recently presented by the Rowland Ward Trustees. In addition to its huge size, this race is characterised by the great development of long black hair on the head, shoulders, and buttocks, and the restriction of the grey band on the back to the loins. On entering the museum the visitor should inspect a segment of the trunk of a fossil conifer from the Trias of Arizona, presented by Mr. Arthur Pearson, and placed by one of the pillars on the right side of the hall. This specimen, which weighs about 2½ tons, has an adventitious interest on account of the brilliant colours presented by the silicified wood, as is admirably shown in the polished upper surface.

THE report of the Sonnblick Society for the year 1913 contains, in addition to the usual meteorological observations at the summit of the Sonnblick, Salzburg (3105 metres), and at other alpine stations, two papers of considerable interest. The first deals with the force of gravity on the Sonnblick, and with general considerations on the earth's gravity, by Major L. Andres. It was intended that General v. Sterneck, who was greatly interested in the subject, and had made numerous determinations in various parts, and had also designed a simple, portable pendulum instrument, should superintend the work, but this was prevented by his death in 1910. The second paper relates to recent scientific research at the Hochobir Observatory (2043 metres) in connection with the determination of the effect of difference of height on the magnetic elements, and with experiments on atmospheric electricity. Good results are here being obtained with pilot balloons, which can be followed to very great heights, owing to the clearness of the air.

SINCE 1783 there has been no great eruption of the Asama-yama, and chief volcano of Central Japan, though the minor explosions and frequent earth-tremors of the last few years seem to point to an approaching period of activity. During the summer months the tremors are recorded at the observatory of Yuno-taira, which lies 1900 ft. below the summit on the south-west slope of the mountain. Prof. Omori, who has studied these records (Bull. Imp. Earthq. Inv. Com., vol. vi., 1914, pp. 149–226), shows that the tremors belong to two classes. Those of the first group (1065 in number, of which one in six were sensible) consist of quick vibrations, are generally of short duration, and never occur during eruptions. The tremors of the second group (1688 in number) consist of slow and always insensible movements, which are of comparatively long duration, and invariably accompany eruptions. In 1911 the average daily number of tremors was eight, and in 1912 eleven.

LA SOCIÉTÉ BELGE DE RADIOLOGIE has issued (L. Severeyns, Brussels, price 6 francs) a series of articles on the medical applications of radio-activity by Prof. J. de Nobele, University of Ghent, MM. Paul Giraud, Jacques and Gaston Danne, and Dr. Henri Coutard, of the Laboratoire de Radio-activité de Gif, près Paris, entitled "Conferences de Radiumbiologie; faites a l'Université de Gand en 1913." The publication deals chiefly with the work at M. Danne's private laboratory at Gif, and is provided with numerous illustrations of the laboratory and the various apparatus there employed. A number of sufficiently striking illustrations, in M. Giraud's article, show the healing of various growths successfully treated with radium. Dr. Coutard contributes a very full and valuable bibliography dealing with the biological side of radio-activity, which occupies sixty pages.

IN the *Verhandlungen* of the German Physical Society for May 15. Dr. E. Gumlich describes a modification of the isthmus method of testing the magnetic qualities of iron in fields of the order of 7500 gauss, which has been found to work very well at the Reichsanstalt. The specimen to be tested consists of a cylindrical rod 0·6 cm. diameter, 35 cm. long, which passes through the 0·6 cm. diameter central holes in two soft iron cylinders of 2·5 cm. outer diameter and 17 cm. length. Between the two cylinders the testing coils, 1·2 cm. wide, are placed. These coils are wound in four layers, so that from the throw given by a ballistic galvanometer connected either to the inner layer or to two consecutive layers in opposition, the induction or the magnetising field outside the specimen can be determined. A slight modification of the arrangement allows transformer sheet to be tested in the same way, the magnetising coil necessary to provide the magnetic flux through the yoke connecting the two cylinders in either case being comparatively small.

WE learn from the *Engineer* for June 19 that a very large installation of Humphrey gas pumps has been ordered by the Egyptian Government for the drainage of Lake Mareotis at Mex, near Alexandria. When completed, there will be eighteen pumps, each capable of delivering 100,000,000 gallons a day through a lift of 20 ft. The present order comprises the first ten pumps, together with the necessary gas producers, Venturi meters, etc. The great size of the pumps may be judged from the fact that their capacity will be between two and three times that of the pumps installed at the Chingford Reservoir. The combustion chambers will have a maximum internal diameter of 8 ft. 8in., and a height of 14 ft. approximately. Each water valve box will be 8 ft. 8 in. in diameter, and 7 ft. high, and will have 100 valves of the hinged type, specially designed to enable any valve to close upon an obstruction without throwing undue stress upon the hinges. On the next stroke, when the obstruction has been removed by the rush of water, the valve will readjust its position automatically and close fairly upon its seat.

THE accidental subsidences which occurred in Paris a few days ago on one of the Paris Metropolitan lines now in course of completion form the subject of an article in *Engineering* for June 19. The driving of the new underground line appears to have been the immediate cause of the catastrophe. The existing masonry sewers seem to have been shored up over the tunnel driven to take the line; they appear to have broken down at parts during the violent storm of June 15, and the water, by flowing into the tunnel, led to undermining and to the caving-in of the tunnel arch by carrying away the earth and stone on which the arch rested temporarily, and also by carrying away at intervals the masonry walls which formed its final support. It is quite evident that the excavation work, which the construction of the new lines involves, is surrounded with most serious difficulties, carried out as it is in the very soft earth which constitutes the subsoil of Paris, amongst a most complicated network of sewers and pipes, and very frequently through bodies of underground water. It is too early to draw conclusions from the disaster, but one point would seem to stand out clearly, and this is to the effect that no precaution and no reasonable amount of timbering should be deemed superfluous when driving a large network of tunnels in a treacherous subsoil like that of Paris.

OUR ASTRONOMICAL COLUMN.

COMET NOTES.—Zlatinsky's comet (1914*b*) is gradually becoming fainter and getting further south, but the following ephemeris, calculated by Prof. Schwassman (*Astronomische Nachrichten*, No. 4739) of Bergedorf, will permit of it being followed with larger instruments :—

	R.A. (true) h.	m.	s.	Dec. (true) °	′	″	Mag.
June 24	9	24	16·2	−9	3	15	8·8
25		25	49·9	9	36	3	
26		27	20·2	10	7	29	
27		28	47·6	10	37	41	9·1
28		30	12·2	11	6	44	
29		31	34·4	11	34	42	
30		32	54·4	12	1	41	
July 1	9	34	12·2	−12	27	46	9·4

The comet discovered by Kritzinger (1914*a*) is a circumpolar object due to its large positive declination. An ephemeris is published in *Astronomische Nachrichten*, No. 4739, by M. P. Chofardet, and the following are the positions for the current week :—

	R.A. h.	m.	s.	Dec. °	′
June 25	22	0	50	+44	49·8
27		5	35	44	50·3
29		10	2	44	48·0
July 1		14	12	44	43·7
3	22	18	4	+44	36·7

Elements and ephemeris for Delavan's comet (1913*f*) are also given in the same number of the *Astronomische Nachrichten*. This comet is now about the 9th magnitude, and is brightening up considerably, but cannot yet be observed owing to its nearness to the sun. It will be picked up, however, somewhere about the latter end of July.

LARGE TELESCOPES.—Mr H. P. Hollis publishes (*Observatory*, June) a very interesting list of large refractors and reflectors, either under construction or already set up in observatories. In the case of refractors, the lower limit of aperture of the object glass is taken as 20 in., and the same limit is also taken in the case of the reflecting telescopes. Of the thirty-eight refractors about which details are given, the largest objective is that of 49·2 in. made for the Paris Exhibition of 1900. As this is out of use, the largest working objective is that of the Yerkes Observatory at Wisconsin, U.S.A. Of the refractors under construction the following may be mentioned :—A 32-in. for the Nicolaieff Observatory, Russia; a 26-in. for the Union Observatory, Johannesburg; three 24-in. for the following observatories: Argentine National Observatory, Cordoba, Chili National Observatory, Santiago, and the Detroit Observatory, Michigan, U.S.A., and a 20-in. for the Chabot Observatory, Oakland, California. The Earl of Ross's 72-in. reflector holds the field for the largest reflector (metallic speculum), while Dr. Common's 60-in. (silver on glass), now at the Harvard Observatory, U.S.A., comes second. Of those under construction, two giants are in hand, namely, one of 100 in. for the Mount Wilson Solar Observatory, and one of 72 in. for the Dominion Observatory, Canada. Others under construction are a 40-in. for the Simeis Observatory, Crimea, and two of 30 in., one for the Helwan Observatory, Egypt, and the other for Mr. D'Esterre's observatory, Surrey, England. It is interesting to note that the number of instruments in each list is about the same, namely, thirty-eight refractors and forty reflectors.

A PLANET BEYOND NEPTUNE.—Mr. H. E. Lau contributes to the June number of *L'Astronomie* a short account of his researches on the perturbations of Neptune and Uranus leading him to suggest a case for a planet beyond Neptune. He produces some interesting and suggestive curves showing the apparent irregularities of the movement of Uranus according to the errors of the tables after Newcomb, Gaillot, and himself. As regards the conclusions he draws at the end of his article he states that they should only be accepted with extreme reserve. The researches made by M. Gaillot and himself, "établissent seulement que l'hypothèse des deux planètes transneptuniennes n'est pas en *conflit* avec les faits observés de sorte qu'il *peut exister deux ou plusieurs grosses planètes au dela des limites actuelles du système solaire.*"

RECENT PROGRESS OF ASTRONOMY.—In the *Annuaire de l'Observatoire Royal de Belgique* for 1914 Prof.